

**REMARKS**

Upon entry of this response and amendment, claims 13-19, 21-22 and 24 are pending in this application, with claim 1-12, 20, 23 and 25 having been withdrawn from consideration. Claim 13 is an independent claim drawn to a method of preparing an endothermic heat shield composition. The remaining claims depend therefrom. Claim 16 has been amended to better clarify the subject matter. Applicant submits that the claim amendments do not add any new matter within the meaning of 35 USC 132.

Claim 16 is objected to as being unclear in its scope. Claims 13-19, 22 and 24 stand rejected as being obvious over U.S. Patent No. 4,288,338; claims 13-14, 16-17, 19, 22 and 24 stand rejected as being obvious over U.S. Patent No. 3,868,346; and claims 13-16 and 24 stand rejected as being obvious over U.S. Patent No. 4,146,676 or U.S. Patent No. 4,277,357.

The claim amendments and following remarks have been made in anticipation that they will place the application in condition for allowance.

**1. Objection to the Claim 16**

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Claim 16 is objected to as being in improper dependent format for not further limiting the scope of the claim from which it depends.

Applicants have amended claim 16 without prejudice or

disclaimer to the subject matter therein. The amendments to the claim make the claim clearer. Upon indication of an allowable generic claim, Applicant intends to add further claims to the deleted subject matter to recapture that which was deleted.

Accordingly, Applicant requests reconsideration and withdrawal of this objection to claim 16.

**2. Rejection of Claims 13-19, 22 and 24 under 35 U.S.C. §103(a)**

Claims 13-19, 22 and 24 stand rejected under 35 U.S.C. 103(a) as being obvious over Phillips (U.S. Patent No. 4,288,338) for the reasons set forth in the Office Action.

**RESPONSE**

Applicant respectfully traverses this rejection and requests reconsideration and withdrawal thereof.

Applicant respectfully submits that the reference of record, does not teach or suggest applicant's inventive subject matter as a whole, as recited in the amended claims. Further, there is no teaching or suggestion in this reference which would lead the ordinary skilled artisan to modify the reference to derive the subject matter as defined in the amended claims.

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The U.S. Supreme Court in *Graham v. John Deere Co.*, 148 U.S.P.Q. 459 (1966) held that non-obviousness was determined under § 103 by (1) determining the scope and content of the prior art; (2) ascertaining the differences between the prior art and the

claims at issue; (3) resolving the level of ordinary skill in the art; and, (4) inquiring as to any objective evidence of nonobviousness.

To establish a *prima facie* case of obviousness, the Examiner must establish: (1) that some suggestion or motivation to modify the references exists; (2) a reasonable expectation of success; and (3) that the prior art references teach or suggest all the claim limitations. Amgen, Inc. v. Chugai Pharm. Co., 18 USPQ2d 1016, 1023 (Fed. Cir. 1991); In re Fine, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988); In re Wilson, 165 USPQ 494, 496 (C.C.P.A. 1970).

A *prima facie* case of obviousness must also include a showing of the reasons why it would be obvious to modify the references to produce the present invention. See Ex parte Clapp, 277 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985). The Examiner bears the initial burden to provide some convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings. Id. at 974.

#### A. The Present Inventive Subject Matter

Claim 13 is drawn to a method for preparing an endothermic heat shield composition which comprises at least 50 wt/wt% hydrated salt and at least one filler material. The method comprises the steps of: heating the hydrated salt to a temperature at which it liquifies; adding at least one filler material; and cooling the

mixture to form a composition wherein the hydrated salt particles are fused to each other.

The remaining claims under rejection depend from claim 13 and necessarily contain all of the limitations found therein. Thus, if claim 13 is unobvious over the prior, so, too, are the remaining claims.

**B. The Prior Art**

In contrast, U.S. Patent No. 4,288,338 to Phillips (the '338 patent) discloses a composition **for the storage of heat energy** utilizing the heat of fusion of the composition. The composition includes a salt-hydrate, a nucleating agent and a porous solid. The porous solid is selected from calcium sulfate hemihydrate and soluble calcium sulfate anhydride.

**C. Differences between the Claimed Subject Matter**

**and the Prior Art**

The differences between applicant's inventive subject matter and the cited references are readily apparent from their independent and distinct disclosures. As can be seen above, claim 13 is drawn to a method for **preparing an endothermic heat shield composition** which comprises at least 50 wt/wt% hydrated salt and at least one filler material. The method comprises the steps of: heating the hydrated salt to a temperature at which it liquifies;

adding at least one filler material; and cooling the mixture to form a composition wherein the hydrated salt particles are fused to each other.

The '338 patent, on the other hand, discloses the use of hydrates **for storing heat in a reversible process** of heat storage and heat release by the production and decomposition of the hydrate bond. Put another way, the '338 patent discloses heat storage for use in cycles where the hydrate is released and reformed. Applicant submits that this has nothing to do with the present invention as presently claimed.

The present method is for the production of a heat shield composition for protection against fire and high temperatures. In the method of the present invention, the decomposition of the hydrate bond is **only** in the first stage of production. The hydrate bond **remains decomposed** also after the hydrate has been released as steam. Thus, the process of the present invention is wholly different than the process disclosed in the '338 patent. Furthermore, the production procedure disclosed in the '338 patent is different than the production procedure disclosed and claimed in the present application.

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Accordingly, Applicant respectfully submits that, due to the differences in the claims and the disclosure, the rejected claims are not obvious over the '338 patent. Applicant respectfully request reconsideration and withdrawal of the rejections.

**3. Rejection of Claims 13-14, 16-17, 19, 22 and 24**

**under 35 U.S.C. §103(a)**

Claims 13-14, 16-17, 19, 22 and 24 stand rejected under 35 U.S.C. 103(a) as being obvious over Merrill (U.S. Patent No. 3,868,346) for the reasons set forth in the Office Action.

**RESPONSE**

Applicant respectfully traverses this rejection and requests reconsideration and withdrawal thereof.

Applicant respectfully submits that the reference of record, does not teach or suggest applicant's inventive subject matter as a whole, as recited in the amended claims. Further, there is no teaching or suggestion in this reference which would lead the ordinary skilled artisan to modify the reference to derive the subject matter as defined in the amended claims.

The U.S. Supreme Court in *Graham v. John Deere Co.*, 148 U.S.P.Q. 459 (1966) held that non-obviousness was determined under § 103 by (1) determining the scope and content of the prior art; (2) ascertaining the differences between the prior art and the claims at issue; (3) resolving the level of ordinary skill in the art; and, (4) inquiring as to any objective evidence of nonobviousness.

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A *prima facie* case of obviousness must also include a showing of the reasons why it would be obvious to modify the references to produce the present invention. See Ex parte Clapp, 277 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985). The Examiner bears the initial burden to provide some convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings. Id. at 974.

**A. The Present Inventive Subject Matter**

As is indicated above, claim 13 is drawn to a method for preparing an endothermic heat shield composition which comprises at least 50 wt/wt% hydrated salt and at least one filler material. The method comprises the steps of: heating the hydrated salt to a temperature at which it liquifies; adding at least one filler material; and cooling the mixture to form a composition wherein the hydrated salt particles are fused to each other.

The remaining claims under rejection depend from claim 13 and necessarily contain all of the limitations found therein. Thus, if

claim 13 is unobvious over the prior, so, too, are the remaining claims.

B. The Prior Art

On the other hand, U.S. Patent No. 3,868,346 to Merrill (the '346 patent) discloses fire retardant compositions formed by admixing a silicone rubber with a hydrated alkali metal borate in amounts sufficient to form a vitreous composition when the borate is heated to its melting temperature and the silicone is thermally decomposed to form silica. The compositions are useful as insulators, which, when heated, evolve only non-toxic gases and form a high-melting vitreous layer which acts as a heat resistant protective coating.

C. Differences between the Claimed Subject Matter

and the Prior Art

The differences between applicant's inventive subject matter and the cited references are readily apparent from their independent and distinct disclosures. As can be seen above, claim 13 is drawn to a method for **preparing an endothermic heat shield composition** which comprises at least 50 wt/wt% hydrated salt and at least one filler material. The method comprises the steps of: heating the hydrated salt to a temperature at which it liquifies;

adding at least one filler material; and cooling the mixture to form a composition wherein the hydrated salt particles are fused to each other.

The '346 patent, on the other hand, discloses a material that is admittedly used for insulation against fire. However, that is the only similarity between the disclosure of the '346 patent and the present claims. According to the '346 patent, the material produced uses the borax hydrate **as a filler**, which is completely contrary to the present claims wherein the solid material is based on the hydrate bonds between molecules. Further, Applicant submits that the material of the '346 patent is different than the material and process as claimed in the present application. In particular, the present claims rely on the hydrates and other compounds for the properties of the heat shield composition, not as filler material as is the case in the '346 patent. Also, Applicant submits that the process in the '346 patent is different than the presently claimed process.

Accordingly, Applicant respectfully submits that, due to the differences in the claims and the disclosure, the rejected claims are not obvious over the '346 patent. Applicant respectfully requests reconsideration and withdrawal of the rejections.

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4. Rejection of Claims 13-16 and 24  
under 35 U.S.C. §103(a)

Claims 13-16 and 24 stand rejected as being obvious over U.S. Patent No. 4,146,676 to Saeman et al. or U.S. Patent No. 4,277,357 to Boardman for the reasons set forth in the Office Action.

**RESPONSE**

Applicant respectfully traverses this rejection and requests reconsideration and withdrawal thereof.

Applicant respectfully submits that the references of record, do not teach or suggest applicant's inventive subject matter as a whole, as recited in the amended claims. Further, there is no teaching or suggestion in this reference which would lead the ordinary skilled artisan to modify the reference to derive the subject matter as defined in the amended claims.

The U.S. Supreme Court in *Graham v. John Deere Co.*, 148 U.S.P.Q. 459 (1966) held that non-obviousness was determined under § 103 by (1) determining the scope and content of the prior art; (2) ascertaining the differences between the prior art and the claims at issue; (3) resolving the level of ordinary skill in the art; and, (4) inquiring as to any objective evidence of nonobviousness.

To establish a *prima facie* case of obviousness, the Examiner

must establish: (1) that some suggestion or motivation to modify the references exists; (2) a reasonable expectation of success; and (3) that the prior art references teach or suggest all the claim limitations. Amgen, Inc. v. Chugai Pharm. Co., 18 USPQ2d 1016, 1023 (Fed. Cir. 1991); In re Fine, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988); In re Wilson, 165 USPQ 494, 496 (C.C.P.A. 1970).

A *prima facie* case of obviousness must also include a showing of the reasons why it would be obvious to modify the references to produce the present invention. See Ex parte Clapp, 277 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985). The Examiner bears the initial burden to provide some convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings. Id. at 974.

#### A. The Present Inventive Subject Matter

As is indicated above, claim 13 is drawn to a method for preparing an endothermic heat shield composition which comprises at least 50 wt/wt% hydrated salt and at least one filler material. The method comprises the steps of: heating the hydrated salt to a temperature at which it liquifies; adding at least one filler material; and cooling the mixture to form a composition wherein the hydrated salt particles are fused to each other.

The remaining claims under rejection depend from claim 13 and

necessarily contain all of the limitations found therein. Thus, if claim 13 is unobvious over the prior, so, too, are the remaining claims.

**B. The Prior Art**

U.S. Patent No. 4,146,676 to Saeman et al. (the '676 patent) discloses a process in which granular calcium hypochlorite particles are encapsulated with at least one layer of a hydrated low melting inorganic salt. In the process, granular calcium hypochlorite particles are lifted from a moving bed to the upper part of a distribution zone and lifted particles are released to fall downwardly through the upper portion to the moving bed. A molten hydrated low melting inorganic salt is sprayed onto the falling particles above the moving bed, and the coated particles are cooled to provide at least one solid outer layer of the low melting hydrated inorganic salt.

U.S. Patent No. 4,277,357 to Boardman (the '357 patent) discloses a polyphase composition for the storage of heat or cold utilizing the latent heat of fusion of a salt hydrate continuous phase intimately intermixed with a hydrated hydraulic cement continuous phase. The continuous phases are optionally in contact with a discontinuous crystalline phase comprising a nucleating component and the composition is enveloped, contained or packaged within a vapor impermeable material.

C. Differences between the Claimed Subject Matter  
and the Prior Art

The differences between applicant's inventive subject matter and the cited references are readily apparent from their independent and distinct disclosures. As can be seen above, claim 13 is drawn to a method for preparing an endothermic heat shield composition which comprises at least 50 wt/wt% hydrated salt and at least one filler material. The method comprises the steps of: heating the hydrated salt to a temperature at which it liquifies; adding at least one filler material; and cooling the mixture to form a composition wherein the hydrated salt particles are fused to each other.

The '676 patent, on the other hand, the use of melted aluminum sulfate, but Applicant submits that is the only similarity with the presently claimed subject matter. The '676 patent discloses a coated granular calcium hypochlorite composition that is used for transportation, removal of dust and increasing its stability under different conditions. The formation of the coated granular calcium hypochlorite particles is accomplished by spraying a hydrate salt onto the particles as they are lifted off a bed. It is important that the hydrate be liquid at relatively low temperatures. However, Applicant submits that the '676 patent fails to disclose

a material or process for preparing a heat shield or solid material, as is claimed in the present application. Rather, the '676 patent only discloses coated granular particles.

Turning now to the '357 patent, the patent discloses use of hydrates **for storing heat or cold by utilizing the latent heat of fusion of a salt hydrate.** Put another way, the '338 patent discloses heat or cold storage by taking advantage of the latent heat of fusion of a salt hydrate. Applicant submits that this has nothing to do with the present invention as presently claimed, since the present claims are directed to a method for preparing a heat shield composition for protection against fire and high temperatures and is not concerned with the storage of heat or cold.

Accordingly, Applicant respectfully submits that, due to the differences in the claims and the disclosures, the rejected claims are not obvious over the '676 or '357 patents. Applicant respectfully requests reconsideration and withdrawal of the rejections.

#### **CONCLUSION**

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Based upon the above remarks, Applicants respectfully submit that all pending claims are allowable. Favorable action with an early allowance of the claims pending in this application is earnestly solicited.

Attorney Docket No. 15150  
Serial No.:09/544,142  
Filed: April 6, 2000

Respectfully submitted,

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